

CAB202 Assignment 2

Due Date: 23:59:59 (AEST) Friday 26th of October 2018

Marks: 40 (40% of your final mark)



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# Assignment Implementation Summary

Table 1. List of features

|  |  |  |
| --- | --- | --- |
| **Assignment Implementation Summary** | | |
| **Item Number** | **Item Description** | **Implementation Level** |
| 1 | Intro | Implemented |
| 2 | Pause Game | Implemented |
| 3 | Player size | Implemented |
| 4 | Block size | Implemented |
| 5 | Random blocks | Implemented |
| 6 | Player movement | Implemented |
| 7 | Treasure | Implemented |
| 8 | Basic game mechanics | Implemented |
| 9 | Block movement | Not implemented |
| 10 | Player velocity | Partially implemented |
| 11 | Player jumping | Implemented |
| 12 | Player inventory | Implemented |
| 13 | Zombies | Implemented |
| 14 | Pause screen advanced | Implemented |
| 15 | ADC for block speed | Not implemented |
| 16 | Switch debouncing | Not implemented |
| 17 | LED warning | Not implemented |
| 18 | Direct control of LCD | Not implemented |
| 19 | Multiple timers | Not implemented |
| 20 | Program (flash) memory | Not implemented |
| 21 | PWM controlled visual effects | Not implemented |
| 22 | Pixel level collision | Not implemented |
| 23 | Serial communication events | Implemented |
| 24 | Serial communication game control | Implemented |

# Basic functionality test plan

## Intro Screen

|  |  |  |  |
| --- | --- | --- | --- |
| **Test of Specific Functionality** | **Test Setup and Actions** | **Expected Result** | **Actual Result** |
| Program displays student name and number initially. When SW2 is pressed the game starts. | Load the program and check that name and student number are displaying as expected. | Student name and student number are displayed. | As expected. |
| Pressing SW2 starts the game. | After loading game, press SW2. | Intro screen clears, and game screen is drawn. | As expected. |

## Paused Screen

|  |  |  |  |
| --- | --- | --- | --- |
| **Test of Specific Functionality** | **Test Setup and Actions** | **Expected Result** | **Actual Result** |
| When joystick centre is pressed once, the game pauses (all sprites stop moving and are unable to move by using the normal controls), the game screen is cleared, and game information is displayed. The game is resumed when joystick centre is pressed again. The game information displayed is:  Lives remaining  Current score  Game time in mm:ss format | press joystick centre and check that live, score and time are displaying as expected. | live, score and time are displayed | As expected. |
| Joystick centre is pressed once to unpause the game | press joystick centre. | Game start again | As expected |

## Gameover Screen

|  |  |  |  |
| --- | --- | --- | --- |
| **Test of Specific Functionality** | **Test Setup and Actions** | **Expected Result** | **Actual Result** |
| If live = 0, game over screen appear: | Died | Gameover screen appear showing score, live, time and player position | As expected. |
| press SW3 to restart the game | Press SW3 | Game start again (all variables reset) | As expected. |
| Press SW2 to end the game | Run game and make live = 0, press SW2 | Game end and student number display | As expected. |

## Player

|  |  |  |  |
| --- | --- | --- | --- |
| Test of Specific Functionality | Test Setup and  Actions | Expected Result | Actual Result |
| Size | Run game and see the player | Player is larger than 3 characters width and 3 characters high | Player is 7 characters width and 6 characters high |
| Starting block | Run game and see the player on the starting block | The player initially appears on a 'starting block' in the top row. The player’s sprite is at least 3 characters high and 3 characters wide. | The player appears on a ‘starting block’ which created on the top row |

## Player movement

|  |  |  |  |
| --- | --- | --- | --- |
| Test of Specific Functionality | Test Setup and  Actions | Expected Result | Actual Result |
| Moving | Run game and press joystick left and right | press joystick left to move left, and right to move right | As expected |
| Player jump | Run game and press joystick up | No lateral motion occurs during downward motion (unless Advanced Functionality is implemented). | As expected |
| Player falls | Run game and step off a block | When off a block, the player free falls downwards at an appropriate speed | As expected |
| Player & display border | Run game and try to run off the screen | The player dies if going out of the screen (top, right, bottom and left) | As expected |

## Treasure size

|  |  |  |  |
| --- | --- | --- | --- |
| Test of Specific Functionality | Test Setup and  Actions | Expected Result | Actual Result |
| Size | Run game and check the treasure | Is no larger than the player's sprite and has a clearly distinct image, | As expected |
| Moving left right and return when touch border | Run game and see the treasure moving horizontally at the bottom of the screen | Spawns at the bottom of the screen and moves back and forward along the bottom, changing horizontal direction when it reaches the edges of the screen | As expected |
| Disappear when touched | Run game and jump on the treasure | Disappears when the player collides with it and do not reappear unless restart the game |  |
| Player touched treasure | Run game and jump on the treasure | Gives the player 2 more lives and the player respawn to the 'starting block' | As expected |
| Not overlap with any block | Run the game and check the treasure | No overlapping with any block | As expected |
| Press SW3 to pause/unpause | Run the game and press SW3 | The treasure stop moving/ moving | As expected |

## Blocks

|  |  |  |  |
| --- | --- | --- | --- |
| Test of Specific Functionality | Test Setup and  Actions | Expected Result | Actual Result |
| Size | Run game and check the block | 2 characters high and at least 10 characters wide | As expected |
| Clear image | Run game and check the block |  | As expected |
| Always at least sprite height + 2 characters vertically away from other blocks. | Run game and check the block | Blocks have 2 characters spaces between them | As expected |
| At least 7 safe blocks and 2 bad blocks on screen | Run the game and check the block | At least 7 safe blocks and 2 bad blocks on screen | Not as expected |
| Blocks have no consistent observable pattern and each block | Run game and check the block | Good and bad block randomly display onscreen and change every time the game reset | As expected |
| Appears in a randomly selected row | Run game and check the block | Good and bad block randomly display in rows and change every time the game reset | As expected |
| Appears in a randomly selected column | Run game and check the block | Good and bad block randomly display in columns and change every time the game reset | As expected |
| Does not overlap other blocks or the display screen | Run game and check the block | Player jump to the display but not overlap it | As expected |

## Game mechanics

|  |  |  |  |
| --- | --- | --- | --- |
| Test of Specific Functionality | Test Setup and  Actions | Expected Result | Actual Result |
| The player starts with 10 lives | Run game and check the lives | Lives appear at 10 | As expected |
| A point is scored every time the player lands on a safe block | Run game and jump to a good block | Score starts at 0 and +1 whenever player touch a good block | Score continuously +1 when player stay on good block |
| The player dies when  they fall off the bottom of the screen  hit a forbidden block.  Touch the screen border  On death, the player respawns to the starting block | Run game and touch screen border.  Run game and touch a bad block.  After death, appear on starting block again | Player touch spike block or fall off the screen and die.  Appear on starting block again | As expected |

# Advanced Functionality Test Plan

## Gravity

|  |  |  |  |
| --- | --- | --- | --- |
| Test of Specific Functionality | Test Setup and  Actions | Expected Result | Actual Result |
| Player fall off when they are not supported by the block | Run game and free fall | Player free fall if not standing on the block | As expected |
| When on a block, the effects of gravity are eliminated – the player does not fall through the block | Run game and press ‘w’ to jump and land on a block | Player stand on and not fall through the block | As expected |

## Food

|  |  |  |  |
| --- | --- | --- | --- |
| Test of Specific Functionality | Test Setup and  Actions | Expected Result | Actual Result |
| Size and image | Run game and press down to see the food | The food size is smaller than player size and have clear distinct image | As expected |
| Player press joystick DOWN to release a food. The food is supported by the block | Run game and press down to see the food | Food appear at the player location (x,y) | As expected |
| Inventory have 5 foods and -1 when press down | Run game and press down to release a food | Food appear at the player location (x,y) | As expected |

## Zombies

|  |  |  |  |
| --- | --- | --- | --- |
| Test of Specific Functionality | Test Setup and  Actions | Expected Result | Actual Result |
| Size and image | Run game and check zombie | Zombie size and image is clearly distinct | As expected |
| Stop when touching a block | Run game and check zombies touching the block | Zombie touch the block and stop (not falling through a good block) | As expected |
| Fall down to the bottom and not reappear | Run game and check zombie falling down to the bottom | Fall down to the bottom and disappear | As expected |
| Prowling left and right along the block | Run game and check zombie moving left and right along the block | Zombie touch the block and moving left and right on the block | As expected |
| Overlap each other | Run game and check zombie overlap each other | Overlap each other | As expected |
| Zombie collides with food  Zombie disappear  Score +10  Food disappear  Number of food increase by 1 | Run game and put food before zombie | Zombie and food disappear when collide with each other along with other characteristic (score+10, number of food in inventory +1) | As expected |
| Player collide with zombie and die  Live -1  Respawn | Run game and control the player to touch the zombie | Player die (live-1) when collide with zombie and respawn to the starting block | As expected |
| Pause screen show number of zombies on screen and number of food in inventory | Run game and pause the game | Pause screen show number of zombies and foods on screen | As expected |

# Specialised teensy functionality

## Serial communication

|  |  |  |  |
| --- | --- | --- | --- |
| Test of Specific Functionality | Test Setup and  Actions | Expected Result | Actual Result |
| Game starts - name of event, player x position, player y position.  Player dies - name of event, reason for death, lives after death, score, game time.  Player respawns - name of event, player x, player y.  Zombies appear - name of event, number of zombies, game time, player lives, player score.  Zombies collide with Food - name of event, number of zombies on screen after collision, number of Food in inventory after collision, game time.  Player collides with treasure - name of event, score, lives, game time, position of player after returning to the top row,  Pause button pressed - name of event, player lives, player score, game time, number of zombies on screen, number of Food in inventory.  Game over - name of event, player lives, player score, game time, total number of zombies fed. | Check the code | The following information should displace when event happen | There is a function but not sure how to check it |

## USB serial communication

|  |  |  |  |
| --- | --- | --- | --- |
| Test of Specific Functionality | Test Setup and  Actions | Expected Result | Actual Result |
| 's' starts the game from the intro screen,  'a' moves the character left,  'd' moves the character right,  'w' lets the character jump,  't' stops and starts the treasure movement,  's' drops the Food where the player stands,  'p' pauses the game and shows the game information,  'r' restarts the game after game over,  'q' takes the game to the student number screen after game over. | Check the code | The following information should displace when event happen | There is a function but not sure how to check it |